USSR

ZALESSKIY, I. Ye., KOTLO, V. N., SEVCHENKO, A. N., Academician of the Belorussian Academy of Sciences; SOLOV'YEV, K. N., SHKIRMAN, S. F., Institute of Physics, Minsk

"Variation, with Time, of Porphyrin Fluorescence Polarization and the Shifting of Iminohydrogens in the Porphin Ring"

Abstract: The authors discuss experiments they have performed in which they discovered new characteristics of radiation anisotropy which, when studied in detail, may lead to the solution of certain problems in the structure of porphyrin molecules. These experiments investigated the polarized luminescence of porphyrins in frozen vitreous solutions. The principal subject of this paper is the dependence of that polarization on the time in which the excitation light operates at low temperatures. Measurement of the degree of polarization was made with an ordinary spectropolarimetric device with two monochromators. The fluorescence was excited by monochromatic, linearly polarized light. and was observed

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ZALESSKIY, I. Ye., et al., Doklady Akademii Nauk SSSR, Vol 207, No 6, 1972, pp 1314-1317

at an angle of 40° with respect to the ray of the exciting light. It was found that the fluorescence of etioporphyrin I, tetrabenzo-porphin, and phthalocyanine in frozen glass was substantially de-polarized with time. Curves showing that variation are given, to-gether with tabulated data. It was also found that the reorienta-tion of the molecular oscillators is connected with the shift in iminohydrogens at the center of the porphin ring. Diagrams of pos-sible isomeric forms of the porphin molecule are shown.

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UDC 535.37

ZALESSKIY, I. YE., KOTLO, V. N., SEVCHENKO, A. N., Academician of the Academy of Sciences Belorussian SSR, SOLOV'YEV, K. N., and SHKIRMAN, S. F., Institute of Physics of the Academy of Sciences Belorussian SSR, Belorussian State University imeni V. I. Lenin, Minsk

"Study of Chlorophyll-Like Molecule Fluorescence Due to Transitions From High Excited Levels"

Abstract: In the case of chlorophyll-like molecules, transitions from high excited levels are of interest because of the possibility that such states of chlorophyll molecules participate in the photosynthesis process. Quasiline spectral data for tetrabenzoporphin (TBP) show that the lifetime of the S_3 level (first component of the Soret band) is not very short, since the width of the quasilines is about 10 cm^{-1}; that is, $\tau_3 \sim 10^{-12}$ sec. The great intensity of the Soret band makes it possible to expect in this case a comparatively high yield of short-wave ("blue") fluorescence $S_3 \to S_0$, and on

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this basis the authors undertook to search for "blue" fluorescence in TBP and metal complexes thereof. During their study the authors received from Professor M. GOUTERMAN (United States) the manuscript of an article which reported the detection of "blue" Zn-TBP fluorescence, thus agreeing with the authors' data. The present article describes results of a systematic study of "blue" fluorescence in TBP and a number of its metal complexes (zinc, cadmium, copper, vanadium (VO-TBP), palladium). as well as chlorophyll a.

The "blue" fluorescence spectrum of Zn-TBP at room temperature is approximately mirror-symmetric to the Soret band of the absorption spectrum. The excitation spectrum for this fluorescence in the region accessible to measurements coincides with the absorption spectrum. There is no quenching of "blue" fluorescence by heavy atoms. These data indicate that the fluorescence is $(S_2 \rightarrow S_0)$-fluorescence and is not attributable to an impurity. The effect of a. solvent and temperature on $(S_2 \rightarrow S_0)$-fluorescence in Zn-TBP

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and the absolute quantum yield of Zn-TBP $(S_2 \rightarrow S_0)$-fluorescence were studied. The "blue" fluorescence in the case of the free base TBP is an order weaker. The radiationless transition $S_4 \rightsquigarrow S_1$ is of a cascade character. No "blue" fluorescence was observed in the studied complexes of TBP with transition metals (V, Cu, Pd) or in the case of chlorophyll a.

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1/2   019
TITLE—QUASI LINEAR SPECTRA OF PORPHYRINS —U—   UNCLASSIFIED

PROCESSING DATE--30OCT70

AUTHOR-(03)-SEVCHENKO, A.N., SOLOVYEV, K.N., SHKIRMAN, S.F.

CCUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(3), 527-35

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--METAL COMPLEX COMPOUND, PORPHYRIN, ELECTRON SPECTRUM,
    VIBRATION FREQUENCY, PHTHALOCYANINE

CCNTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2032

STEP NC--UR/0048/70/034/003/0527/0535

CIRC ACCESSICN NO--AP0125620

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0125620

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ENERGY LEVEL DIAGRAM OF THE
  PORPHIN RING SYSTEM IN NONMETALATED PORPHYRINS AND THEIR METAL COMPLEXES
  IS GIVEN. THE VIBRATIONAL STRUCTURE OF THE ELECTRONIC SPECTRA OF
  PORPHINE DIHYDROPORPHINE, AND THE 2 TETRAHYDROPORPHINES ARE REPORTED.
  THE QUASI LINEAR SPECTRA OF AZABENZOPORPHYRINS ARE COMPARED, AND THE
  FUNDAMENTAL VIBRATIONAL FREQUENCIES OF TETRABENZOPORPHINE, ITS MONO, DI,
  AND TRIAZA ANALOGS, AND PHTHALOCYANINE ARE TABULATED. THE QUASI LINEAR
  SPECTRA OR PORPHINE DERIVS. TOGETHER WITH LOW TEMP. POLARIZATION
  MEASUREMENTS YIELDED ADDNL. EVIDENCE FOR THE VIBRATIONAL CHARACTER OF
  THE BANDS IN THE ELECTRONIC SPECTRUM OF PORPHYRINS AND FOR THE ALMOST
  EQUAL INTENSITY OF THE VIBRATIONS INDEPENDENT OF THEIR SYMMETRY.
  FACILITY: INST. FIZ., USSR.

UNCLASSIFIED

USSR

UDC 534-8

KOPETSKIY, CH. V., ROKHLIN, L. I., and SHKIROV, V. S.

"Effect of Fine Structure of Aluminum Single Crystals on the Attenuation of Elastic Ultrasonic Vibrations"

V sb. Mekhanizmy vnutr. treniya v poluprovodn. i metal. materialakh (Internal Friction Mechanisms in Semiconductor and Metallic Materials -- Collection of Works), Moscow, "Nauka," 1972, pp 83-88 (from RZh-Fizika, No 8, Aug 72, Abstract No 8Zh557 from authors' abstract)

Translation: A study was made of the attenuation of elastic vibrations of ultrasonic frequency (10Mhz) in aluminum (99.97%) single crystals as a function of their plastic deformation (1-27%) and as a function of the content of alloying additions of iron and silicon (0.03-0.9 wt.%). It was established that the attenuation coefficient is unaffected by slight degrees of deformation or alloying. With high degrees of deformation (9-27%) the attenuation coefficient increases sharply. Data on ultrasonic attenuation are compared with the results of a study of single-crystal fine structure by the methods of X-ray diffraction topography and electron-microscopy and

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KOPETSKIY, CH. V., et al., Mekhanizmy vnutr. treniya v poluprovodn. i metal. materialakh, Moscow, "Nauka," 1972, pp 83-88

discussed on the basis of the dislocation theory of attenuation and the theory of ultrasonic scattering by blocks by virtue of elastic anisotropy of the crystal lattice. Bibliography with 14 titles.

2/2

Magnesium

ROKHLIN, L. L., and SHKIROV, V. S., Moscow

"The Effect of Plastic Deformation and Heat Treatment on the Damping of Ultrasound in Magnesium Single Crystals"

Abstract: A study was made of the damping of ultrasonic oscillations of 10 Mhz frequency in magnesium single crystals of 99.99% purity, grown by the Bridgeman method. The study was made in their initial condition and also after plastic deformation and gradual annealing from room temperature up to 450° C in intervals of 30°C and in one-hour aging periods. It was found that plastic deformation increases the damping coefficient α and that the character of the dependence of α on the annealing temperature varies at different annealing stages. Both in the initial single crystals and after mechanical and heat treatment, the values of α exceeded values of the damping coefficient for found-conducting polycrustal Mg-base alloys by a factor of approximately ao. The damping coefficient decreased without visible microstructural changes in the annealing of deformed single crystals up to 300°C. The change of the ultrasound damping coefficient by further increasing the annealing temperature is related to processes of recrystalliza-
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ROKHLIN, L. L., and SHKIROV, V. S., Fizika i Khimiya Obrabotki Materialov,
No 1, Jan-Feb 72, pp 83-86

tion and the growth of grains. Damping data are correlated with data obtained
by metallographic and x-ray topographic investigations. Three illustrations,
10 bibliographic references.

2/2

1/2   024
TITLE--SUBSTRUCTURE OF CRYSTALS STUDIED IN A CONVERGENT MICROBEAM -U-
UNCLASSIFIED   PROCESSING DATE--04DEC70

AUTHOR-(03)-KOPETSKIY, CH.V., KLUYESKO, G.I., SHKIROV, V.S.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(4), 451-2

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--COPPER FOIL, CRYSTAL STRUCTURE, X RAY ANALYSIS, CRYSTAL
    LATTICE DISLOCATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0907
                                STEP NO--UR/0032/70/036/004/0451/0452

CIRC ACCESSION NO--AP0131493
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0131493
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD AND APP. ARE DESCRIBED
   FOR PHOTOGRAPHY OF SMALL REGIONS OF CRYSTALS WITH A CONVERGENT MICROBEAM
   OF WHITE X RADIATION. AN ANGULAR RESOLN. OF SIMILAR TO 5 PRIME IS
   ACHIEVABLE FOR THE ANGLE OF MISORIENTATION OF THE CRYSTAL BLOCKS.   THE
   SIZE OF THE CRYSTAL BLOCKS, AS WELL AS THE D. OF DISLOCATIONS OF A GIVEN
   SIGN, CAN BE ESTD. THE METHOD WAS USED TO FOLLOW THE CHANGE OCCURRING
   DURING ANNEALING OF CU FOIL. THE MIN. BLOCK SIZE OBSD. WAS 3-5 MU, IN
   GOOD AGREEMENT WITH THE RESULTS OF METALLOGRAPHIC STUDIES.
   FACILITY: INST. FIZ. TVERD. TELA, CHERNOGOLOVKA, USSR.

UNCLASSIFIED

USSR   UDC: 621.376.332(088.8)

GLAZOV, B. I., SHKIRYATOV, V. V.

"A Digital Frequency Discriminator"

USSR Author's Certificate No 263691, filed 11 Feb 67, published 4 Jun 70
(from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12D78 P)

Translation: The proposed digital frequency discriminator contains: two
phase detectors to which the signal to be measured is sent in phase, while
the reference signal is sent through a phase shifter which displaces by
$\pm\pi/4$; a shaper amplifier connected to the output of the first phase detector,
a limiter amplifier connected to the output of the second phase detector,
a coincidence circuit connected between the outputs of the shaper amplifier
and limiter amplifier, and a reversible counter with detector of the sign
of the mismatch frequency. To eliminate the zero drift of the frequency
response, the output of the shaper amplifier is connected to the counting
input of the reversible counter.

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UDC 621.175.845.001.5

SHKLOVER, G. G., and GRIGOR'YEV, V. G.

"On the Effect of the Air-Evacuating Device on the Intensity of Steam Condensation in a Steam Turbine's Condenser"

Kaluga, Materialy nauch.-tekhn. konf. Kaluzh. Fil. MVTU -- sb. (Materials of the Scientific and Technological Conference at the Kaluga Branch of the Moscow Higher Technical School imeni N. E. Bauman -- Collection of Works), 1972, pp 63-64 (from Referativnyy Zhurnal -- Teploenergetika, No 3, 1973, Abstract No 3S39)

Translation: In order to investigate the effect of an admixture of air on the intensity of the heat exchange process, the authors conducted experimental research, using a number of condensers with the very small initial concentrations of air in the steam (0.003-0.1 percent) that are typical of steam turbine condensers. In connection with the condensation of a moving air-steam mixture, it turned out to be possible to express the effect of the added air in the steam on the intensity of the heat exchange process unequivocally, for all the condensers that were investigated, in terms of the initial concentration of air in the steam $(\mathcal{E}_0$ kg/kg) and the specific steam load on the heat exchange surface $(g_n(kg/m^2 \cdot hr))$: $\alpha_{mix}/\alpha_n = 0.7(\mathcal{E}_0 g_n)^{-0.05}$,

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- USSR

SHKLOVER, G. G. and GRIGOR'YEV, V. G., Materialy nauch.-tekhn. konf. Kaluzh. Fil. MVTU -- sb., 1972, pp 63-64

where α_{mix} and α_n = average coefficient of heat emission from the air-steam mixture and pure steam respectively. This function allows for the direct effect of adding air to the steam on the intensity of heat exchange in the condenser when the air-evacuating device (or ejector) does not limit the condenser's operational possibilities. Special experiments that were carried out to investigate the combined operation of condensers with ejectors showed that when the characteristics of the condenser and the steam-jet ejector do not coincide, the hollow beam's deaerating capability drops sharply, along with there being a reduction in the efficiency of the heat transfer process.

2/2

USSR   UDC 536.248.2.001.5

GRIGOR'YEV, V. G., ROSINSKIY, A.Z., and SHKLOVER, G. G.

"Study of Heat Transfer in a Steam Turbine Condenser"

Dokl. nauchno-tekhn. konferentsii po itogam nauchno-issled. rabot
za 1968-1969 gg. Sekts. Promteploenergetiki. Podsekts. Sushil'n
I teploobmen. ustroistv (Reports of the Scientific-Technical Conference
on Summaries of Scientific Research Work for 1968-1969. Industrial
Thermal Engineering Section, Subsection on Desiccating and Heat
Transfer Devices), Moscow Power Engineering Institute, 1970, pp 119-124
(from RZh-Teploenergetika, No 5, May 70, Abstract No 5G94)

Translation: It is experimentally shown that distribution of local
heat loading, when using the method of water cooling in a two-channel
system, is practically uniform for the case of pure vapor; with air
added, the distribution becomes non-uniform, and increases this tendency
with increased air added to the vapor. Two figures, three references.

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USSR   UDC 536.248.2.001.5

LEBEDEV, P. D., BUYEVICH, A. V., GRIGOR'YEV, V. G., ROSINSKIY, A.Z.,
UVAROV, V. V., and SHKLOVER, L. L.

"On the Question of Condensing Clean Vapor In Tubular Streams of
Variable Cross Section"

Dokl. nauchno-tekhn. konferentsii po itogam nauchno-issled. rabot
za 1968-1969 gg. Sekts. Promteploenergetiki. Podsekts. Sushil'n
i teploobmen. ustroistv (Reports of the Scientific-Technical Conference
on Summaries of Scientific Research Work for 1968-1969. Industrial
Thermal Engineering Section, Subsection on Desiccating and Heat
Transfer Devices), Moscow Power Engineering Institute, 1970, pp 113-118
(from RZh-Teploenergetika, No 5, May 70, Abstract No 5G90)

Translation: For calculating the effect of variable cross sections
of tubular stream in the formula for mean KTO (coefficient of thermal
omission), for the case of condensing clean vapor in counterflowing
horizontal tubes as proposed by L. D. Berman, a factor is introduced
which is a function of vapor condensation level. Experiments have
been made to determine the values of constants in the modified
formula. Three figures, three references.
1/1

UDC: 518.5:681.3.06

USSR

SHKLOVER, M. D.

"Program of Search in a Two-Dimensional Graph of a Cycle Which Contains a Given Point Inside"

Tr. 3 Zimn. shkoly po mat. programmir. i smezhn. vopr., 1970, vyp. 3 (Works of the Third Winter School on Mathematical Programming and Related Problems, 1970, No 3), Moscow, 1970, pp 687-694 (from RZh-Kibernetika, No 9, Sep 71, Abstract No 9V604)

Translation: The author considers the following problem. A pair of orthogonal vectors of unit length l_1, l_2 is taken. The ends of the vectors $x = il_1 + jl_2$ for all i, j running through the integers 0, ±1, ±2,... form a two-dimensional lattice T^2. Let $A = \{(i, j)\, 1 \leqslant i \leqslant n,\, 1 \leqslant j \leqslant n\}$ be a subset of T^2 in the system of coordinates with $l_1 = (0, -1)$, $l_2 = (1, 0)$, $\delta(i,j)$ is a function from the class of Ω-functions defined on A and assuming the value 1 or 0 at each point. The two-dimensional graph Γ is defined in the following way. As the set of vertices of graph Γ we take the set $B = \{(i,j): \delta(i,j) = 1\}$. The two vertices (i_1,j_1) and (i_2,j_2) will be assumed to be joined by an edge if $i_1 = i_2$

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USSR

SHKLOVER, M. D., Tr. 3 Zimn. shkoly po mat. programmir. i smezhn. vopr., 1970, vyp. 3, Moscow, 1970, pp 687-694

and $/j - j\{ = 1$ or $j_1 = j_2$ and $i_1 - j_2 = 1$. Let $(u,u) \subset A$ be some point for which $\delta(u,v) = 0$.

It is necessary to determine whether a closed cycle exists in Γ such that the point (u,v) lies inside the region bounded by this cycle. A closed cycle is defined here as a sequence of edges of Γ such that there is a continuous closed broken line in the plane which corresponds to this sequence. An algorithm is outlined for solving this problem, and a program in ALGOL language which realizes the algorithm is described. V. Mikheyev.

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1/2   020
UNCLASSIFIED
PROCESSING DATE--11DEC70
TITLE--DISTRIBUTION OF ALKALI METAL IMPURITIES DURING CRYSTALLIZATION FROM
SOLUTIONS OF CESIUM AND RUBIDIUM PERCHLORATES -U-
AUTHOR-(02)-SHKLOVSKAYA, R.M., VULIKH, A.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(4), 872-4

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CRYSTALLIZATION, SOLID SOLUTION, POTASSIUM PERCHLORATE, SODIUM
COMPOUND, RUBIDIUM COMPOUND, CESIUM COMPOUND, PERCHLORATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0947
STEP NO--UR/0080/70/043/004/0872/0874
CIRC ACCESSION NO--AP0131532
UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0131532

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISTRIBUTIONS OF K, NA, OR RB PERCHLORATE ADMIXED WITH CSCLO SUB4 AND OF K, NA, OF CS PERCHLORATE ADMIXED WITH RBCLO SUB4, BETWEEN THE SOLID AND THE MOTHER LIQUOR OBTAINED ON COOLING AQ. SOLNS. OF CSSLO SUB4 OR RBCLO SUB4 SATD. AT 99 PLUS OR MINUS 1DEGREE (WITH DEFINITE AMTS. OF THE ADMIXT. ADDED) SLOWLY TO 23.0 PLUS OR MINUS 0.2DEGREES, WERE FOLLOWED BY FLAME PHOTOMETRY. ACCORDING TO DISTRIBUTION COEFF. INITIAL CONCN. OF ADMIXT. PLOTS, THE COPPTN. OF NACLO SUB4 IS OF THE ADSORPTION TYPE IN BOTH THE CASES. THE COCRYSTN. OF K OR RB PERCHLORATE WITH CSCLO SUB4 AND THAT OF K OR CS PERCHLORATE WITH RBCLO SUB4 LEADS TO SOLID SOLNS., AND THE PLOTS INDICATE ISOMORPHISM OF KCLO SUB4, RBCLO SUB4, AND CSCLO SUB4. THE CRYSTN. PROCEDURES ARE PROPOSED AS WAYS OF FREEING RB SIMULTANEOUSLY FROM K AND CS OF FREEING CS FROM K.

UNCLASSIFIED

105051g Pressure sensitivity of Schottky diode current.
Elinson, M. I.; Pokalyakin, V. I.; Polyakova, A. L.; Stepanov,
G. V.; Shklovskaya-Kordi, V. V. (Inst. Radiotekh. Elektron.,
Moscow, USSR). Radiotekh. Elektron. 1970, 15(1), 210-12
(Russ). The effect of a const. or alternating pressure from
corindon or glass needles on Schottky diodes obtained by sputter-
ing of a Au film on n-Si was studied. The mechanism of current
change is discussed, and the role of modifications of surface center
states is pointed out.
                                                    G. Thirot

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                            19801980   4

USSR

SHKLOVSKIY, A. I.

UDC: 51.621.391

"Some Problems of Graphic Regularity"

Zap. nauch. seminarov Leningr. otd. Mat. AN SSSR (Notes of Scientific Seminars. Leningrad Department of Mathematics. Academy of Sciences of the USSR), 1971, 20, pp 271-282, 290-291 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V654)

Translation: The article deals with problems of pattern recognition and extrapolation of sequences, which leads the author to the problem of finding regular (i. e. frequently repeated) subwords in words, and the coding of words which reflects the internal structure and the relations in the word. Extensive use is made of the apparatus of "concrete-free" grammars in coding: the word is replaced by a code of a grammar which generates only this word. It is proved that if the power of the initial alphabet is n, and the length of a word is at least $4n^2 + 3n + 1$, then such a word may be recorded by a shorter code, and this boundary is exact. It is also proved that the length of any word code is at least $3 \log_2 z - 2$, where z is the length of the word. A. Muchnik.

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USSR   UDC: 621.315.592

SHKLOVSKIY, B. I.

"Jump Conductivity in Semiconductors in a Strong Electric Field"

Leningrad, Fizika i tekhnika poluprovodnikov, No 12, 1972, pp 2335-2340

Abstract: Noting that interest in semiconductor jump conductivity in strong electric fields has risen only recently, the author finds the nonresistive function I(E) in the temperature region in which the semiconductor resistivity drops exponentially, as demonstrated in an earlier paper (N. F. Mott, Phil. Mag. 19, 7, 1970). It is assumed, in the present paper, that the temperature is at the low level at which all effects connected with the migration of carriers to the resolution zones can be neglected, and that there is no breakdown in the semiconductor material. Only the nonlinearity of the electron origin is considered; heating of the lattice and the establishment of equilibria in the phonon system are not taken into account. Expressions are obtained for I(H,E) for both parallel and crossed H and E fields.

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USSR

UDC [537.226+537.311.33]:[537+535]

SHKLOVSKIY, B. I., and EFIROS, A. L.

"Impurity Zone and the Conductivity of Compensated Semiconductors"

V sb. Materialy 6-y Zimney shkoly po teorii yadra i fiz. vysok. energiy, 1971. Ch. 3 (Materials of the 6th Winter School on Nuclear Theory and High Energy Physics, 1971. Part 3 -- Collection of Works), Leningrad, 1971, pp 438-454 (from RZh Fizika, No 12, Dec 71, Abstract No 12Ye1202)

Translation: The effect of compensation on the electron spectrum and the conductivity of semiconductors is explained. The lecture is devoted to the fundamental case of high alloying. The case of low alloying as applied to Ge ($N \leq 5 \cdot 10^{18}$ cm^{-3}) is discussed briefly.

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UNCLASSIFIED
TITLE--STATE DENSITY TAILS IN HIGHLY DOPED SEMICONDUCTORS -U-   PROCESSING DATE--04DEC70

AUTHOR-(02)-SHKLOVSKIY, B.I., EFROS, A.L.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA I TEKHNIKA POLUPROVODNIKOV, VOL. 4, FEB. 1970, P. 305-316

DATE PUBLISHED----FEB70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SEMICONDUCTOR MATERIAL, IMPURITY CENTER, IMPURITY LEVEL,
   CARRIER DENSITY, FORBIDDEN BAND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1465
                               STEP NO--UR/0449/70/004/000/0305/0316

CIRC ACCESSION NO--AP0112459
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0112459

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THEORETICAL ANALYSIS OF THE
ELECTRONIC STATE DENSITY OF HIGHLY DOPED SEMICONDUCTORS IN THE FORBIDDEN
BAND.   THE CONDITIONS OF APPLICABILITY OF THE THEORY ARE SMALLNESS OF
THE STATE DENSITY AND APPLICABILITY OF THE METHOD OF EFFECTIVE MAXX.   IT
IS ASSUMED THAT FLUCTUATIONS IN THE IMPURITY CONCENTRATION ASSUME THE
FORM OF HOMOGENEOUS SPHERES THE CARGES AND RADII OF WHICH MAY VARY.
SUCH AN ASSUMPTION MAKES IT POSSIBLE TO DETERMINE THE MAIN TERM OF THE
LOGARITHM OF THE STATE DENSITY TO THE NEAREST NUMBERICAL FACTOR.   A LAW
GOVERNING THE DECREASE IN THE STATE DENSITY FAIRLY DEEP WITHIN THE
FOBIDDEN BAND IS DERIVED, AND A CLASSIFICATION OF THE CASES WHICH CAN
OCCUR IN SEMICONDUCTORS IS PRESENTED.   FACILITY: AKADEMIIA NAUK
SSSR, FIZIKO-TEKHNICHESKII INSTITUT, LENINGRAD, USSR.

UNCLASSIFIED

Acc. Nr:AP0043688   S   Ref. Code: UR 0056

BAND TAILING AND ABSORPTION OF LIGHT IN SEMICONDUCTORS

Shklovskiy, B. I.; Efros, A. L.

The density of states arising in the forbidden band of a strongly doped semiconductor as a result of concentration fluctuations of charged impurities is considered. It is shown that sufficiently deep in the forbidden band the state density is determined by clusters of attracting impurities; these clusters form multicharged nuclei of atoms whose ground hydrogen-like states realize the energy required. The state density decreases with increasing tail depth as $\ln \rho(\varepsilon) \approx -\sqrt{\varepsilon} \ln \varepsilon$ for random distribution of the impurities and as $\ln \rho(\varepsilon) \sim -\varepsilon^{3/2}$ if a correlation exists in the impurity distribution due to mutual repulsion during preparation of the sample. It is shown that the frequency dependence of the interband light absorption coefficient in the deep tail reproduces the state density.

REEL/FRAME
19770092

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Acc. Nr: AP0045358   Abstracting Service: 5/70   Ref. Code:
INTERNAT. AEROSPACE ABST.   U50000

A70-22516   Pulsar NP 0532 and the injection of relativistic
particles into the Crab Nebula. I. S. Shklovskii (Akademiia Nauk
SSSR, Institut Kosmicheskikh Issledovanii, Moscow, USSR).
Astrophysical Journal, vol. 159, Feb. 1970, pt. 2, p. L77-L80. 10
refs.

Reinterpretation of the high-frequency spectrum of pulsar NP
0532. Improvements are introduced in the calculations previously
(1969) presented in explanation of the observed properties of the
infrared, optical, and X-ray spectra of this pulsar, by a
synchrotron-emission mechanism. The problem of this
synchrotron-emission mechanism is brought into connection with the
general problem of injection of relativistic particles into the Crab
Nebula. It is felt that the expanded interpretation provides a key to
the understanding of the whole problem of synchrotron emission
from the Crab Nebula.
                                                        M.V.E.

                                                        ALS

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REEL/FRAME
19780290

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1/2   011
TITLE--A NEW REFRIGERATOR SHIP -U-   UNCLASSIFIED   PROCESSING DATE--11DEC70

AUTHOR--SHKLOVSKIY, V.

COUNTRY OF INFO--USSR

SOURCE--VODNYY TRANSPORT, SEPTEMBER 22, 1970, P 2, COLS 5-7

DATE PUBLISHED--22SEP70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--REFRIGERATION EQUIPMENT, FISHING SHIP, INTERNAL COMBUSTION
   ENGINE/(U)GTAD 48 ENGINE, (U)RITSA FISHING SHIP

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605010/F07 STEP NO--UR/9028/70/000/000/0002/0002
CIRC ACCESSION NO--AN0140162
                         UNCLASSIFIED

CIRC ACCESSION NO--ANC140162
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE DESCRIBES THE RITSA, A
  PRODUCTION REFRIGERATION FISHING VESSEL (PTR) OF THE REMBRANDT CLASS,
  BUILT IN 1969. THE SHIP DISPLACES MORE THAN 3,000 TONS, ITS PROW TO
  STERN LENGTH IS 103.6 M, ITS BEAM IS 16.6 M, AND THE HEIGHT OF THE BOARD
  IS 11.3 M. IT HOLDS CAN STORE 1,700 TONS OF FISH PRODUCTS. ITS 8TAD-40
  INTERNAL COMBUSTION ENGINE DEVELOPS 3,000 HP TO DRIVE IT AT 14 KNOTS.

UNCLASSIFIED

1/2   021   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--THE ARGUS, A RESEARCH FISHING VESSEL -U-

AUTHOR--SHKLOVSKIY, V.

COUNTRY OF INFO--USSR

SOURCE--VODNYY TRANSPORT, AUGUST 20, 1970, P 2, COLS 1-4

DATE PUBLISHED--20AUG70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, EARTH SCIENCES AND
    OCEANOGRAPHY
TOPIC TAGS--FISHING SHIP, UNDERWATER ACOUSTICS, UNDERWATER TV, UNDERWATER
    RESEARCH LABORATORY, REFRIGERATION SYSTEM/(U)ARGUS FISHING SHIP

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/1640   STEP NO--UR/9028/70/000/000/0002/0002

CIRC ACCESSION NO--AN0138616
                              UNCLASSIFIED

2/2   021
CIRC ACCESSION NO--AN0138616   UNCLASSIFIED   PROCESSING DATE--27NOV70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SCIENTISTS ONBOARD THE "ARGUS" ARE
PROVIDED WITH MEANS OF CONDUCTING RESEARCH SIMULTANEOUSLY IN 13
DIFFERENT AREAS, SUCH AS PHYSICAL AND CHEMICAL STUDIED OF THE WATER
MEDIUM AT DEPTHS UP TO 5 KM OR ACOUSTICAL AND TELEVISION SERACH FOR
SCHOOLS OF FISH.   THE "ARGUS" WHICH CAN ACCOMMODATE 130 RESEARCHERS,
WORKERS AND CREW DISPLACES 3,840 TONS, HAS 14 METER BEAM, 10 METER
BOARD, AND MEASURES 85.2 METERS FROM BOW TO STERN.   ITS MAIN DIESEL
ENGINE, 8DR43-61 V1, CAN DEVELOP 2000 HP AT SPEEDS UP TO 13 KNOTS.   THE
SHIP IS OUTFITTED WITH A LABORATORY FOR UNDERWATER RESEARCH, AND
REFRIGERATION UNITS FOR COMMERCIAL FREEZING OF FISH.

UNCLASSIFIED

UNCLASSIFIED
TITLE--MEET THE OSTROV RUSSKIY -U-   PROCESSING DATE--13NOV70

AUTHOR--SHKLOVSKIY, V.

COUNTRY OF INFO--USSR, SWEDEN

SOURCE--VODNYY TRANSPORT, MAY 23, 1970, P 4, COLS 2-6

DATE PUBLISHED--23MAY70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, BEHAVIORAL AND SOCIAL
    SCIENCES
TOPIC TAGS--CARGO SHIP, REFRIGERATION, FISHING SHIP, SHIPBUILDING
    ENGINEERING, FOREIGN TECHNICAL ASSISTANCE/(U)OSTROV RUSSKIY CARGO SHIP,
    (U)OSTROV SIBIRYAKOVA, (U)OSTROV SHOKALSKOGO

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/1249   STEP NO--UR/9028/70/000/000/0004/0004

CIRC ACCESSION NO--AN0110868
UNCLASSIFIED

CIRC ACCESSION NO--AN0110868
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OSTROV RUSSKIY, A 15,700 TON REFRIGERATION SHIP WITH 20.5 M BEAM, 12 M BOARD, MEASURING 150.5 M FROM BOW TO STERN, WAS THE FIRST SHIP OF ITS CLASS BUILT FOR THE SOVIET UNION IN 1969 BY LINDHOL, MENS VARV, A SWEDISH FIRM. OTHER SHIPS OF THIS CLASS THAT HAVE BEEN CONSTRUCTED ARE THE OSTROV SIBIRYAKOVA AND THE OSTROV SHOKAL, SKOGO. VESSELS OF THIS CLASS ARE CAPABLE OF DEVELOPING SPEEDS OVER 18 KNOTS. THEIR MISSION IS TO TAKE IN FISH FROM TRAWLERS AND TO SUPPLY FISHING VESSELS WITH FUEL, WATER, AND LUBRICANTS. THEY ARE EQUALLY AT HOME IN THE ARCTIC OR TROPICAL WATERS.

UNCLASSIFIED

1/2   013
TITLE--DEFORMATION IN THE ROLLING OF SLABS IN VERTICAL ROLLS -U-

UNCLASSIFIED   PROCESSING DATE--13NOV70

AUTHOR-(03)-ODINOKOV, YU.I., SHKLOVSKY, V. YA., POTAPKIN, V.F.

COUNTRY OF INFO--USSR

SOURCE--IZVEST. V.U.Z., CHERNAYA MET., 1970, (2), 87-90

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--METAL ROLLING, METAL DEFORMATION, LEAD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0539

STEP NO--UR/0148/70/000/002/0087/0090

CIRC ACCESSION NO--AP0124234

UNCLASSIFIED

CIRC ACCESSION NO--AP0124234   UNCLASSIFIED   PROCESSING DATE--13NOV70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THREE DIMENSIONAL DEFORMATION
OF SLABS ROLLED IN VERTICAL ROLLS WAS STUDIED AS A FUNCTION OF THE
FUNDAMENTAL ROLLING PARAMETERS USING PB MODELS, WITH SPECIAL REF. TO THE
QUESTION OF THE DEGREE OF SPREAD RESULTING FROM DIFFERENT ROLLING
VELOCITIES. THE RESULTS ARE CONDENSED INTO THE FORM OF GENERALIZED
RELATIONSHIPS ENABLING THE DEGREE OF DEFORMATION TO BE DETERMINED AT ANY
SPECIFIED LAYER; IN PARTICULAR, THESE RELATIONSHIPS SHOW THE LEVEL AT
WHICH SUBSTANTIAL DEFORMATION OF THE METAL CEASES.

UNCLASSIFIED

AAC052683

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General,
Derwent, 2-70

244222   SINGLE-BUCKET EXCAVATOR HYDRAULIC DRIVE
consists of pumps 1,2,3, distributors 4,5,
6, power cylinders 10...14, and main line. It is
distinguished by connecting the throttle valve block
15 to the regulator 18, by means of return valve
16 and reduction valve 17, on the main line
connecting the power cylinder to the distributor.
The reduction valve is connected to the power main
line through the distributor. This achieves
smooth speed regulation.
4.3.68. as 1223001/29-14, SMIRNOV, O.A. and
SHKLOVSKIY, V. IA. Highways Machinery Inst.
(8.10.69) Bul. 17/14.5.69. Class 84d, Int. Cl.
E 02f.

19821459

AA0052683

Vsesoyuznyy Nauchno-Issledovatel'skiy Institut Stroitel'nogo
i Dorozhnogo Mashinostroyeniya

19821460

USSR

KOSTYUKEVICh, N. I., ShKLYAR, A. Kh., and DOLBIK, M. S. (Editors)

UDC 502.7(023)

Okhrana priorody (Nature Conservation), Minsk, Izdatel'stvo Vysheyshaya shkola, 1972, 468 pp

FOREWORD...   Contents

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USSR

KOSTYUKEVICh, N. I., ShKLYAR, A. Kh and DOKBIK, M. S., Izdatel'stvo Vysheyshaya shkola, 1972, 468 pp

USSR

KOSTYUKEVICH, N. I., ShKLYAR, A. Kh and DOKBIK, M. S., Izdatel'stvo Vysheyshaya shkola, 1972, 468 pp

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USSR $\subset$ UDC 621.373.421.13

BARZHIN, V. YA., KOSHKAREV, YE. A., KUL'KIN, G. A., SHKLYAR, A. N.

"Superhigh Frequency Quartz Oscillator"

Elektron. tekhnika. Nauchno-tekhn. sb. (Electronic Engineering. Scientific and Technical Collection), 1970, ser. 9, vyp. 2, pp 62-63 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D270)

Translation: This article contains a description of a quartz oscillator assembled from a transistor and elements with lumped parameters according to the "capacitive Hartley oscillator circuit."

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USSR   UDC 539.4.016.2+535.561+535.391.2+535.15

DIDRIKIL', L. N., SHKLYAR, A. N., KOSHKAREV, Ye. A., Physicotechnical Institute
imeni S. U. Umarov of the Academy of Sciences Tadzhik SSR

"Study of the Effect of Treatment on the Surface Structure of Quartz by the IR
Spectroscopy Method"

Abstract: The infrared reflection spectra from the AT-cut of a quartz surface
(the shear plane is parallel to the x-axis and forms an angle of 35° 15' with the
z-axis) after cutting and polishing were investigated in the region 1300-900 cm^{-1}.
The reflection spectrum of a polished surface, which in this range of wavelengths
coincides with the spectrum of the pickled surface, was used as a comparison spec-
trum. A graph is given showing the reflection spectrum of quartz with various
treatments of the surface in polarized light. The polished sample has maximum
reflections at 1115 cm^{-1} and 1180 cm^{-1} and a trough at 1160 cm^{-1}. Small displace-
ments in the trough for different samples are attributed to residual stresses in the
surface layer. The reflection curves in unpolarized light practically coincided

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USSR

DIDRIKIL', L. N., et al, Izvestiya Akademii nauk Tadzhikskoy SSR, Otdeleniye
fizikomatematicheskikh i geologo-khimicheskikh nauk, No. 4, 1970, pp 10-14

with the corresponding curves in polarized light. It was concluded from analysis
of the data that a thin anisotropic layer of α-crystobalite is formed on the sur-
face of α-quartz under cutting and polishing.

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USSR

Under experimental conditions, the value of the lefthand side of the inequality above was found to be of the order of unity. The authors express their gratitude to R. Z. Sagdeyev for his comments and to V. S. Knyazyuk for his assistance with the numerical computations. They are members of the Institute of Terrestrial Magnetism, Ionosphere, and Radio Wave Propagation, Academy of Sciences, USSR.

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USSR

BUD'KO, N. I., KARPMAN, V. I., and SHKLYAR, D. R.

"Stability of a Plasma in the Field of a Longitudinal Monochromatic Wave"

Abstract: The evolution of disturbances in a plasma located in the field of a longitudinal monochromatic wave of high amplitude is investigated. Interest in this question was aroused by the work of Wharton, Malmberg, and O'Neil (Phys. Fl., 11, 1968, p 1761) in which it was found that such a wave generates satellites whose frequency differs from that of the fundamental wave by an amount of order $1/\tau$, where τ, the characteristic oscillation time of the particles captured by the field of the fundamental wave, is inversely proportional to the charge-to-mass ratio of the electron and to the amplitude and wave number of the fundamental wave. The approach to the problem of the mechanism behind this phenomenon used by the authors employs the distribution function obtained by O'Neil. It is found that the satellites can be generated only for a strong wave that can satisfy the condition $v_\varphi \, v_r/v_T^2 > 1/2$: where v_φ is the phase velocity, v_r is the velocity of the captured particles, and v_T is the thermal velocity of the particles.

1/2

USSR   UDC 669.15.24.74:539.379

BOGACHEV, I. N., CHUMAKOVA, L. D., and SHKLYAR, R. Sh.,
Sverdlovsk

"Change of the Substructure of Manganese and Nickel Austenitic
Alloys in the Process of Micro-Impact Effect"

Abstract: A study by the method of diffraction microroentgeno-
graphy was made of structural changes on micro-impact loading
arising in austenitic alloys on Fe-Ni and Fe-Mn bases, in order
to explain the causes of their different behavior. Observed chan-
ges in specimens, 10 x 10 x 10 mm, of stable G38 and N40 alloys, sub-
jected to micro-impact action on a magnetostrictive vibrator, are
discussed by reference to microroentgenograms and diagrams showing
the changes of the average size of fragments and of the average
angle of disorientation of subgrains of these alloys. Annealing
at 1200 °C was found to produce a nonuniform structure in Ni and
Mn austenites. An intensive size reduction of fragments and an

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USSR

BOGACHEV, I. N., et al., Izvestiya Akademii Nauk SSSR, Metally, No 2, Mar-
Apr 73, pp 164-169

increasing angle of disorientation on micro-impact action is cha-
racteristic for austenitic Ni. A more gradual change of these pa-
rameters is observed on austenitic Mn. The hardening and the re-
sistance to micro-impact loads of stable austenitic alloys depend
on the degree of disorientation, the dimensions of substructural
components, and the kinetics of their change in the process of
deformation. Five figures, seven bibliographic references.

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USSR

Poisson coefficient on the relation between the longitudinal and radial deformations of the cylindrical shell of the tank with a liquid during axisymmetric vibrations is estimated in the example of an isotropic momentless and inertialess cylindrical shell with a stationary absolutely rigid flat bottom completely filled with an incompressible liquid with a free surface. In general, it is necessary to consider the relation of the longitudinal and radial deformations of the supporting shell of the tank as a result of the Poisson effect.

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USSR

GRIGOLYUK, E. I., SHKLYARCHUK, F. N. (Moscow)

"Equation of Perturbed Motion of a Body With a Tin-Walled, Elastic Shell Partially Filled With Fluid"

Moscow, Prikladnaya Matematika i Mekhanika, May-June 1970, pp 401-411

Abstract: The authors derive linear equations for the perturbed motion of a thin-walled elastic shell partially filled with a heavy compressible fluid, considered in an acoustical approximation. The principal vector and principal moment of reaction acting from the side of the shell on the "supporting body" are determined. Perturbed motion with small oscillations is characterized by the shift of some point on the surface of the rigid attachment of the shell, by a turning relative to this point, and by elastic displacements which are broken down into the natural forms of the oscillations of the attachment of the shell, which is partially filled with a fluid. A variational principle is used to determine the natural frequencies and forms of the oscillations of a shell with a compressible fluid.

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USSR

GRIGOLYUK, E. I., et al, Prikladnaya Matematika i Mekhanika, May-
June 1970, pp 401-411

The calculation of the compressibility of the fluid makes it possible
to consider the oscillations in the acoustical spectrum of frequencies
and -- in addition, as the calculations indicate -- can be shown to
be necessary in the calculation of the lower frequencies of the
elastic oscillations of a shell: for example, the axisymmetrical
oscillations of comparatively thick shells of revolution. Calcula-
tion of the gravitation is necessary in the study of oscillations
in the spectrum of frequencies of gravitational surface waves as well
as the oscillations of soft shells with fluid.

2/2

USSR   UDC   539.376:534.1

SHKLYARCHUK, N. F., TARLAKOVSKIY, D. V.

"Oscillations and Stability of an Elastic Controlled Missile With Cavities
Partially Filled With Liquid"

V sb. Konf. po kolebaniyam mekh. sistem. Tezisy dokl. (Conference on Os-
cillations of Mechanical Systems. Abstracts of the Reports), Kiev, "Nauk.
dumka", 1971, p 86 (from RZh-Mekhanika, No 10, Oct 71, Abstract No 10V269)

Translation: The authors consider two-dimensional perturbed motion of a
system of two elastically connected bodies, one of which (the "carrier")
has cavities partially filled with an ideal liquid, and is loaded by a
compressive tracking force. The system is stabilized by deflection of
the tracking force vector through a right angle by means of a stabiliza-
tion automaton with pickups on both the carrier and the attached body.
Stability boundaries of small oscillations of the closed system are de-
termined on the basis of D-partition in the plane of two parameters.
    As an example, the authors analyze the case where the carrier has
two cylindrical cavities with liquid, and the angular stabilization autom-

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USSR

SHKLYARCHUK, N. F., TARLAKOVSKIY, D. V., <u>Konf. po kolebaniyam mekh. sistem.</u>
<u>Tezisy dokl.</u>, Kiev, Nauk. dumka, 1971, p 86

aton is described by a second-order differential equation which relates
the angle of deflection of the force vector to the angle and the angular
rate of turn of one of the two bodies which are elastically hinged to-
gether.
    A study is made of the effect which wave motions of the liquid and
various parameters of the system (coefficients of amplification, rigidity
of the connector, longitudinal acceleration, etc.) have on the stability
boundaries. Approximate results are given which were derived on the basis
of equations in which individual degrees of freedom were not taken into
account, or the relations between different forms of oscillations were
disregarded. Various simplifications are evaluated.

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1/2   025   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--ULTRASONIC EQUIPMENT FOR AUTOMATING PRODUCTION PROCESSES -U-

AUTHOR-(04)-VIGDERMAN, V.SH., ZAYTSEV, V.B., PUGER, M.A., SHKLYAREVICH,
  G.M.
COUNTRY OF INFO--USSR

SOURCE--MOSCOW, MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, NO 2, 1970,
  PP 13-16
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, MECH., IND., CIVIL AND
  MARINE ENGR
TOPIC TAGS--EMULSION, FOOD TECHNOLOGY, FOOD PROCESSING EQUIPMENT,
  ULTRASONIC EFFECT/(U)AGB1 MACHINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/1300   STEP NO--UR/0118/70/000/002/0013/0016

CIRC ACCESSION NO--AP0121804
                        UNCLASSIFIED

2/2   025   UNCLASSIFIED   PROCESSING DATE--30OCT70

CIRC ACCESSION NU--AP0121804

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DESCRIPTION OF A MACHINE, THE
AGB-1, USING ULTRASONICS FOR OBTAINING STABLE, HIGHLY DISPERSED WATERFAT
EMULSIONS IN THE FOOD PRODUCE INDUSTRY IS GIVEN. THE MACHINE IS NOW IN
ASSEMBLY LINE PRODUCTION. IT OPERATES ON THE PRINCIPLE OF THE PASSAGE
UNDER PRESSURE OF THE MIXTURE THROUGH AN ACOUSTIC, MULTI ROD
HYDRODYNAMIC CONVERTER. AS A RESULT OF THE TURBULENCE INDUCED BY THE
ACOUSTIC OSCILLATIONS AND THE HYDRODYNAMIC SHOCKS, THE STABLE AND FINELY
DISPERSED. THE FIRST SHOWING THE VARIOUS COMPONENTS AND THEIR
INTERCONNECTION; THE SECOND, A SCHEMATIC OF THE ELECTRICAL CONNECTIONS;
AND A THIRD, A LINE DRAWING OF THE EXTERNAL VIEW OF THE MACHINE FOR
PREPARING THE EMULSION. THE LATTER HAS BEEN USED FOR SEVERAL YEARS IN
CONFECTIONER PLANTS IN VARIOUS CITIES. ANOTHER DEVICE USING THE
ULTRASONIC PRINCIPLE IS DISCUSSED IN THIS ARTICLE. THIS IS THE AKSH
MACHINE FOR CLEANING JARS AND GLASSES. A THIRD MACHINE, FOR CLEANING
FILTERS, IS KNOWN AS THE AMSH. THIS ULTRASONIC EQUIPMENT IS ALSO
DESCRIBED IN THE TEXT AND IS SHOWN IN DIAGRAMMATIC FORM. ALL THESE
DEVICES ARE MANUFACTURED BY THE VNIEKIPRODMASH, OF WHICH THE AUTHORS ARE
EVIDENTLY MEMBERS. THIS ORGANIZATION HAS BEEN COLLABORATING WITH THE
ACOUSTICAL INSTITUTE OF THE USSR ACADEMY OF SCIENCES IN THE DESIGN AND
MANUFACTURE OF ULTRASONIC EQUIPMENT FOR WELDING POLYMER STRIPS USED IN
FOOD PACKING. OTHER MACHINES IN THE PROCESS OF DEVELOPMENT ARE
ULTRASONIC WELDING MACHINES FOR VACUUM PACKING FISH PRODUCTS AND DRIED
MILK, AS WELL AS OTHER FOOD MATERIALS.

                              UNCLASSIFIED

UDC 621.7.022.6

USSR

VIGDERMAN, V. SH., ZAYTSEV, V. B., POGER, M. A., and SHKLYAREVICH, G. M.

"Ultrasonic Equipment for Automating Production Processes"

Moscow, Mekhanizatsiya i Avtomatizatsiya Proizvodstva, No2, 1970, pp 13-16

Abstract: A description of a machine, the AG3-1, using ultrasonics for obtaining stable, highly dispersed waterfat emulsions in the food produce industry is given. The machine is now in assembly-line production. It operates on the principle of the passage under pressure of the mixture through an acoustic, multi-rod hydrodynamic converter. As a result of the turbulence induced by the acoustic oscillations and the hydrodynamic shocks, the stable and finely dispersed: the first showing the various components and their interconnection; the second, a schematic of the electrical connections; and a third, a line drawing of the external view of the machine for preparing the emulsion. The latter has been used for several years in confectioner plants in various cities. Another device using the ultrasonic principle is discussed in this article. This is the AKSh machine for cleaning jars

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USSR

VIGDERMAN, V. SH., et al., Moscow, Nekhanizatsiya i Avtomatizatsiya
Proizvodstva, No 2, 1970, pp 13-16

and glasses. A third machine, for cleaning filters, is known as the
AMSh. This ultrasonic equipment is also described in the text and
is shown in diagrammatic form. All these devices are manufactured by
the VNIEKIProdmash, of which the authors are evidently members. This
organization has been collaborating with the Acoustical Institute
of the USSR Academy of Sciences in the design and manufacture of ultra-
sonic equipment for welding polymer strips used in food packing.
Other machines in the process of development are ultrasonic welding
machines for vacuum-packing fish products and dried milk, as well
as other food materials.

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USSR

UDC 535.324+535.341]:539.238

USOSKIN, A. I., ShKLYaREVSKIY, I. N., GERChIKOV, A. S., and VERLINSKIY, Yu. S

"The Optical Properties of Thin Films of Bismuth"

Abstract: Experimental studies were made of two groups of bismuth films. Films in the first group were precipitated in a vacuum at room temperature and then heated to 120°C, while those in the second group were deposited on a substrate heated to 120°C. Films in the first group were of a gray-blue color with transitions to yellowish at low thicknesses, while those in the second group were an intense yellow color. Each group includes films of different, precisely controlled thicknesses. The films deposited at room temperature could not be separated from the substrate, so they were deposited on materials that were transparent to the electron beam for electron microscopy. The two groups of films show a clear distinction in pattern, those in the second group maintaining large, distinct islands of bismuth even at high thicknesses, while the islands tend to run together in the first groups.

    Visible light measurements were made to determine the indices of refraction and absorption of the films. Nominal values permitted the calculation of the imaginary and real components of the effective dielectric constant of the films.
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USSR

These calculations yield both positive and negative roots. Special observations permitted the determination that the positive roots and the indices of refraction and absorption associated with them are valid for the thinner films, while the negative values are valid for thicker films. The transition comes when the two values of effective dielectric constant tend to be equal, that is when the expression under the radical in the formula for this value becomes zero; this thickness is greater for light of longer wavelengths.

The results indicate that as the islands of bismuth coalesce in films of the first group the properties approach those of much thicker films, while the films of the second group maintain fairly constant indices even when the thickness and the size of the islands change significantly (thickness 11 - 18 nanometers). The relevant values for various thicknesses and wavelengths are given in two tables.

2/2

USSR

SHKLYAREVSKIY, I. N. and USOSKIN, A. I.

"Optical and Structural Characteristics of Thin Amorphous Antimony Films"

Abstract: The purpose of this article is to fill in gaps of knowledge concerning the optical characteristics of thin films of metals other than noble, which have virtually been ignored. No work has been done in the parallel investigation of the optical and structural characteristics of these metals, and this omission the present article, describing experiments performed with amorphous antimony, is designed to fill. The specimens were prepared by depositing antimony on a glass substrate in a vacuum of the order of $5 \cdot 10^{-5}$ mm Hg with a purity of 99.99%. Reflection, transmission, and thicknesses of the films were measured, and the structure of the films was examined with the use of the UEMV-100V electron microscope. The optical constants of the films are computed, and photomicrographs plus photographs of electron diffraction patterns are shown. The authors thank A. S. Breslavskiy and Yu. S. Verlinskiy for preparing the photos.

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UDC 621.315.592(088.8)

USSR

KISELEV, A. M., LEZHEBOKOV, I. I., NAROYCHIK, S. S., NIKOLAYEV, A. A., OSOVSKIY, M. O., SELIVANOV, P. YA., SHKLYAREVSKIY, V. K.

"Procedure for Automatic Regulation of the Process of Noncrucible Zone Melting"

USSR Author's Certificate No 276016, Filed 24 May 68, Published 6 Oct 70 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G430)

Translation: A procedure is introduced for automatic regulation of the process of noncrucible zone melting by keeping the ingot diameter constant by means of a signal received as a result of measuring the effect of the projection of the zone on a photoreceiver for controlling the ingot diameter. To improve accuracy of regulation, a profile of the zone located directly on the crystallization front is projected on the photoreceiver for controlling the diameter of the ingot by means of a crystallization-front tracking system.

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USSR

UDC 678.06-419.';677.521.7.01:53

VISHNEVSKIY, G. YE., ZHUKOVA, R. I., SHLENSKIY, O. F., and SHKLYAROV, A. YU.

"Effect Which the Porosity, Concentration and Properties of Components Have on the Thermal Conductivity of Fiberglass Plastics"

Moscow, Plasticheskiye Massy, No 11, Nov 70, pp 34-38

Abstract: The article presents the results of formal analysis and the use of Maxwell's electrothermal analogy for the thermal conductivity of dispersed media in studying the effect of porosity, cracks, gas inclusions and the mutual arrangement of the filler and binder elements on the processes of thermal conductivity in the primitive cells of the structural elements of fiberglass plastics. It was found that two- and three-dimensional electrothermal modeling can be used to refine the results of formal analysis.

1/1

1/2   013   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--LIGAND EXCHANGE IN SOLUTIONS OF COPPER COMPLEXES AND ITS INFLUENCE
ON EPR SPECTRA -U-

AUTHOR-(02)-SHKLYAYEV, A.A., ANUFRIYENKO, V.F.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(1), 107-10

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--EPR SPECTRUM, CUPPER COMPLEX, LIGAND, ORGANIC SOLVENT,
TEMPERATURE DEPENDENCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0032   STEP NO--UR/0020/70/191/001/0107/0110

CIRC ACCESSION NO--AT0125872
                    UNCLASSIFIED

CIRC ACCESSION NO--AT0125872   UNCLASSIFIED   PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SHAPE OF THE EPR SPECTRUM OF THE DIETHYLDITHIOCARBONATE COMPLEX OF CU AS A FUNCTION OF THE INTERACTION OF THE COMPLEX WITH LIGANDS PRESENT IN SOLN. WAS STUDIED. EPR SPECTRA WERE TAKEN IN PHME, C SUB5 H SUB5 N AND PHME 5PERCENT C SUB5 H SUB5 N AT 300DEGREESK. THE TEMP. DEPENDENCE WAS STUDIED AT MINUS 5, MINUS 40, AND 70DEGREES. EQUATIONS ARE DERIVED AND A METHOD IS PROPOSED FOR STUDYING EXCHANGE REACTIONS WITH FREQUENCIES 3 TO 4 TIMES GREATER THAN IN NMR SPECTROSCOPY.   FACILITY: INST. KATAL., NOVOSIBIRSK, USSR.

UNCLASSIFIED

TITLE--REACTIVITY OF COMPOUNDS WITH DIARYLMETHYLOL GROUPS. IV. BASICITY OF
   SUBSTITUTED AMIDES OF DIARYLGLYCOLIC ACIDS -U-

AUTHOR-(04)-SHKLYAYEV, V.S., CHEKRYSHKIN, YU.S., KOBLOVA, A.?.,
   PANTSURKIN, V.I.

COUNTRY OF INFO--USSR

SOURCE--ZH ORG KHIM. 1970, 6(5), 1055-61

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY

TOPIC TAGS--AMIDE, CONDENSATION REACTION, AMINE DERIVATIVE, AROMATIC
   CARBOXYLIC ACID, CHLORINATED ORGANIC COMPOUND, BENZENE DERIVATIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1270   STEP NO--UR/0366/70/006/005/1055/1061

CIRC ACCESSION NO--AP0134944
                            UNCLASSIFIED

CIRC ACCESSION NO--AP0134944   UNCLASSIFIED   PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONDENSATION OF MESITYLAMINE WITH (CO SUB2 ET) SUB2 GAVE 2,4,6,ME SUB3 C SUB6 H SUB2 NHCOCO SUB2 ET, WHICH WAS TREATED WITH RC SUB6 H SUB4 MGBR (R IS H, O-ME, M-ME, P-ME, O-MEO, P-MEO, P-F, M-CL, P-CL; OR P-BR) TO GIVE 2,4,6,ME SUB3 C SUB6 H SUB2 NHCOC(OH) (C SUB6 H SUB4 R) SUB2 (I). THE PK VALUES OF I DEPEND ON R. THEY WERE CORRELATED WITH BROWN OKAMOTO SIGMA PRIMEPOSITIVE CONSTS. FACILITY: PERM. FARM. INST., PERM, USSR.

UNCLASSIFIED

USSR   UDC: 621.73.043

OKHRIMENKO, Ya. M., SMIRNOV, O. M., BALAKIN, V. P., BOYTSEKHOVSKIY, V. A.,
SHKLYAYEV, V. Ye.

"Process of Production of Long-Axis Forgings by Extension in the Superplastic
State"

Kuznechno-Shtampovochnoye Proizvodstvo, No 1, Jan 73, pp 7-10.

Abstract: A process of monaxial form change in the state of superplasticity,
the relationship between initial and final dimensions of the piece, kinematic
plans of experimental installations and the dependence between the primary
parameters of the process in the initial and stable stages are studied. The
conditions of development of the state of superplasticity are also studied.
Examples of products produced by this method are presented and the advantages
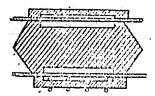and disadvantages are noted.

1/1

USSR

UDC   621.372.852.2

SHKODA, G. I.

"Phase Rotator"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No. 33, 1971, p 173

Abstract: The phase rotator consists of a waveguide section, a ferrite collar, and a control coil mounted on a ferromagnetic core. The purpose of the device is to reduce the energy required for control by the installation of an auxiliary permanent magnet whose pole ends are in opposition to those of the core. A cross-section sketch of the assembly is shown.

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SHKODO L.A.

Ref. Code: 21R9003

Acc. Nr.: AN0104123

TITLE-- ANNOUNCEMENT OF THE COMMITTEE ON LENIN AND STATE PRIZES, U.S.S.R.

NEWSPAPER-- IZVESTIYA, MAY 28, 1970, P 4, COLS 1-5

ABSTRACT-- NINETY ONE BASIC AND APPLIED RESEARCH WORKS HAVE BEEN NOMINATED FOR THE STATE PRIZES. TWO OF THESE, "THE MULTI-PURPOSE INDUSTRIAL HELICOPTER KA-26", BY N. I. KAMOV, V. B. AL.PEROVICH, V. B. BARSHEVSKIY, A. A. DMITRIYEV, G. I. IOFFE, M. A. KUPFER, L. A. POTASHNIK, N. N. PRIOROV, A. G. SATAROV, I. M. VEDENEYEV, S. B. BREN, AND V. A. NAZAROV, AND "THE DEVELOPMENT OF TURBOFAN JET ENGINES NK-8 AND NK-8-4, AND THE DEVELOPMENT AND REDUCTION TO SERIAL PRODUCTION A SYSTEM OF TECHNOLOGICAL PROCESSES WHICH ASSURED WIDE USES FOR TITANIUM ALLOYS", BY N. D. KUZNETSOV, M. T. VASILISHIN, V. A. KURGANOV, P. M. MARKIN, V. D. RADCHENKO, P. A. SUKHOV, A. A. MUKHIN, V. G. SHITOV, G. I. MUSHENKO, L. A. SHKODO, AND G. P. DOLGOLENKO, HAVE BEEN SUBMITTED BY THE MINISTRY OF THE AVIATION INDUSTRY.

Reel/Frame
19870555

1/2

Acc. Nr.: AN0104123

"A SERIES OF INVESTIGATIONS INTO THE DYNAMICS OF A BODY WITH FLUID-FILLED CAVITIES", /65-68/, BY N. N. MOISEYEV, A. A. PETROV, V. V. RUMYANTSEV AND F. L. CHERNOUS'KO AND "ULTRA HIGH PRECISION JIG BORING MILLS WITH 1,000 X 1,600 AND 1,400 X 2,240 MM PLATENS", BY A. I. KIR'YANOV, V. G. ABRAMOVICH, I. V. GUTKIN, A. S. ALIMPIYEV, G. B. PAUKOV, AND A. S. YEGUDKIN, HAVE BEEN SUBMITTED BY THE COMPU-TATION CENTER OF THE ACADEMY OF SCIENCES AND THE MINISTRY OF THE MACHINE TOOL CONSTRUCTION AND TOOL INDUSTRY, RESPECTIVELY.

"THE RADICALLY IMPROVED MELTING TECHNOLOGY OF CRITICAL-PURPOSE HIGH-ALLOY STEELS AND ALLOYS OF IMPROVED QUALITY ACHIEVED BY THE INERT GAS TREATMENT OUTSIDE THE FURNACE", BY YU. V. GERASIMOV, O. M. CHEKHOMOV, N. V. SIDOROV, S. K. FILATOV, B. A. CHEREMNYKH, R. M. KHAYRUTDINOV, I. P. BARMOTIN, L. K. KOSYREV, K. P. BAKANOV, N. N. VLASOV, P. I. MELIKHOV, AND N. A. TULIN, HAS BEEN SUBMITTED BY THE ZLATOUST METALLURGICAL PLANT.

2/2

Reel/Frame

19870556

KZ

Plant Pathology

'USSR

UDC 632.4:633.11:582.285.2(47+47)

LESOVOY, M. P., FEDOROVA, V. A., SHKODENKO, V. I. TERESHCHENKO, B. A., SHOPINA, V, V., IBRAGIMOV, G. R., AKHMEDOV, S. A., YEROGORVA, N. L., MAMONTOVA, A. N., PERESYPKIN, V. F., BOYKO, Yu. I., SHAVARINA, Z. A., CHUMAKOV, A. Ye., YARKMENKO, Z. I., PAYCHADZE, L. V., and EL'CHIBAYEV, A. A., All-Union Institute of Plant Protection, Ukrainian Institute of Plant Protection, Ukrainian Agricultural Academy, Azerbaydzhan Institute of Agriculture, Central Asian Institute of Plant Pathology, and Kazan' Institute of Plant Protection, Georgian Institute of Plant Pathology

"Race Formation in Puccinia triticina Eriks. and P. striiformis West. in the USSR"

Leningrad, Mikologiya i Fitopatologiya, No 6, 1972, pp 428-434

Abstract: Study of the causative agents of orange leaf and stripe rusts of wheat in different parts of the Soviet Union and some other European countries showed that, despite the great variety of races, only a few are responsible for epiphytotics. The main races are fairly constant from year to year. This stabilization is due to the fact that that more than 90% of all the regionalized wheat varieties in the USSR are susceptible to all races of the pathogens. The racial composition of the pathogens in the USSR is similar to that occurring elsewhere in Europe because of the exchange of original forms and use of the

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USSR

LESOVOY, M. P., et al., Mikologiya i Fitopatologiya, No 6, 1972, pp 428-434

same components in breeding wheat varieties. The appearance of new races and
biotypes and changes in their virulence are the result of mutation, hetero-
karyosis, resistant varieties, and sexual hybridization.

2/2

FIALKOV, Yu. G., TARAT, E. Ya., PICHUKOV, A. P., NIKITINA, A. P., SUKODINA, V. G.

"Purification of Magnesium Production Gases to Remove Chlorine in Hollow Scrubber"

Translation: The influence of the composition of the absorbent, speed and direction of gas flow, and sprinkling density on absorption of Cl by lime milk was studied in an industrial scrubber. The decrease in the degree of gas purification resulted from a change in the hydrodynamic conditions in the scrubber due to foaming of the absorber. Foaming began at concentrations of $Ca(ClO)_2$ of 43-60 g/l with various contents of $Ca(OH)_2$ and resulted from decomposition of the $Ca(ClO)_2$. Addition of $CaCl_2$ to the absorbent (initial content 100 g/l) did not change the indices of absorption. With counterflow movement of the phases, increasing the gas speed from 1 to 2.5 m/sec improved purification. The effectiveness of operation of the direct flow zone of the scrubber was decreased with increasing gas speed. Increasing the sprinkling density from 18 to 60 $m^3/m^2 \cdot hr$ helps to improve the absorption indicators. With counterflow, the empirical equation $K_V = 2.75 \cdot W^{1} \cdot L^{0.67}$ was produced, where K_V is the volumetric coefficient of the rate of absorption, $Kmol/m^3 \cdot hr \cdot bar$, W is the is the gas speed, m/sec, and L is the sprinkling density, $m^3/m^2 \cdot hr$. 6 fig.

USSR

UDC: 535.376

VLASENKO, N. A., GERGEL', A. N., SHKOLA, A. A., Institute of Semiconductors, Academy of Sciences of the UkrSSR

"Long-Life Electroluminescent Thin-Film D.C. Light Sources"

Kiev, Poluprovodnikovaya Tekhnika i Mikroelektronika. Resp. Mezhved. Sb., No 7, 1972, pp 85-87

Abstract: The paper describes the basic characteristics of a new type of electroluminescent thin-film d.c. film structures. The proposed light sources have a service life of about 2000 hours. The film structure is made on the basis of ZnS-Mn by a single-stage method. Maximum emission intensity is in the 585 nm region. The luminance is 20 cd$\cdot$m^{-2} when the applied voltage is 10-25 V and the current density is $0.4-4$ mA$\cdot$mm^{-2}. The current-voltage and luminance-voltage curves are given for a typical specimen, as well as the change in luminance and current density over 2000 hours of continuous operation of an electroluminescent cell.

1/1

USSR   UDC 621.313.322-82:621.311.2(497.1+498)

PINSKIY, G. V., SHKOL'NIK, E. V.

"Largest Hydrogenerators on the Danube"

Elektrosila -- V sb. (Electric Power -- Collection of Works), No 28, Leningrad, Energiya Press, 1970, pp 24-29 (from RZh-Elektrotekhnika i Energetika, No 2, Feb 71, Abstract No 2 D115)

Translation: Basic parameters and characteristic features of the structural assembly of hydrogenerators which are manufactured for the Dzherdap and Zheleznyye Vorota Hydroelectric Power Plants being built with Soviet aid in Romania and Yugoslavia are presented. With respect to technical and economic indexes, these generators are greatly superior to all earlier constructed low-speed hydrogenerators. A new theoretical approach to the selection of the calculated version of the machine considering the requirements with respect to values of the transition reactivity, moment of inertia and efficiency, and considering the characteristics of the insulation of the stator winding used, is proposed. There are 4 illustrations and 1 table.

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USSR   UDC 621.165:620.193.1

SHKOL'NIK, G. T., LUZHNOV, M. I., YELOVIKOV, A. S., and ZELENSKIY, V. G.

"Ways of Preventing the Erosion of Blade Apparatus of Power Plant Turbines"

Abstract: Scale appears to be the main source of abrasive particles
which form on pipe inner surfaces made of perlitic steels, due to
inadequacy of their actual temperature conditions to heat resis-
tant characteristics of materials used. The admissible temperature
of the superheater pipe wall outside surface appears to be 575°C
for the 12Kh1MF steel and 585°C for the 12Kh2MFSR and EI531 steels.
It is necessary to ensure an optimal fresh steam temperature con-
trol on units with direct flow boilers with the purpose of reducing
not only the exit temperature but also the intermediates along the
circuit. It is necessary to broaden the use of superheater packets
made of scale proof steels in boilers, where the wall temperature

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USSR

SHKOL'NIK, G. T., et al., Osvoyeniye blokov moshchnost'yu 300 MVt na Ekibastuzsk.ugle", 1972, pp 105-115

is more than 575-585°C. Until elimination of scale formation, it is advisable to carry out periodically (once in 2-3 years) a chemical removal of scale from perlitic section of steam superheater. Loading of turbines of the Troitskoy Hydroelectric Power Station at the start from a cold and non-cooled state, as well as operation at partial loads should be conducted at slipping pressures with fully opened control valves. 5 figures, 5 references.

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USSR

UDC 691.327:620.17

VAYNSHTOK, I. S., SHKOL'NIK, I. E., MIZROKHI, Yu. N., BEREZNITSKIY, L. V.,
Candidates of Technical Sciences, and TSINTSKILADZE, D. M., Engineer

"Something New in the Technique of Strength Determination of Concrete by
the Ultrasonic Pulse Method"

Abstract: The All-Union Scientific Research Institute of Industrial Tech-
nology of Precast Reinforced Concrete Structural Parts and Products conducted
investigations as an attempt to develop a physically well-founded method of
determining the strength of concrete in products, structures, and buildings,
with the use of a minimum quantity of calibration samples. The theoretical
and experimental data discussed here can be used to simplify the factory
control of concrete strength and to confirm the accuracy of the authors'
computed relation between the strength, the propagation rate of ultrasonic
pulses, and structural defects of concrete of the controlled composition.
By the here-described ultrasonic device, which provides a computed time
reading of the propagation of oscillations, the strength of concrete can
also be determined in cases where a calibration curve can not be plotted on
the base of a suitable number of samples. Test results by the new method
are presented. Two illustrations, three tables, three bibliographic ref-
erences.

1/1

Miscellaneous

USSR

UDC 620.178.3

SHKOL'NIK, L. M.

"Rate of Growth of Cracks and Viability of Metal"

Moscow, Skorost' Rosta Treshchin i Zhivuchest' Metalla, Izd-vo Metallurgiya, 1973, 216 pp

Translation of Annotation: This book examines a method of discovering initial fatigue cracks and observing their development. The achievements in the field of using the mechanics of fracture for analyzing the growth of cracks are given. Different methods are examined for expressing the results of the investigation on the rate of growth of the cracks. The results of research are discussed in which the influence of metallurgical, structural, and exploitational factors on the rate of growth of cracks and the stability of metal is studied. An analysis is given of the influence of the parameters of cyclical loading. The book is intended for technical engineering and scientific workers of all branches of the metallurgical and machine construction industry. The article contains 109 illustrations and 114 bibliographic references.

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USSR

SHKOL'NIK, L. M., Skorost' Rosta Treshchin i Zhivuchest' Metalla, Izd-vo
Metallurgiya, 1973 216 pp

CONTENTS

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SHKOL'NIK, L. M., Skorost' Rosta Treshchin i Zhivuchest' Metalla, Izd-vo
Metallurgiya, 1973 , 216 pp

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SHKOL'NIK, L. M., Skorost' Rosta Treshchin i Zhivuchest' Metalla, Izd-vo
Metallurgiya, 1973, 216 pp

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USSR

SHKOL'NIK, L. M., Skorost' Rosta Treshchin i Zhivuchest' Metalla, Izd-vo
Metallurgiya, 1973, 216 pp

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Epidemiology

USSR

UDC 616.981.717-036.22(477)

ZATULOVSKIY, B. G., SHKOL'NIK, L. YA., ANISHCHENKO, G. A., MURCHOPAD, V. A., and
FONBERG, M. M., Kiev Institute of Epidemiology, Microbiology, and Parasitology,
Donetskaya Oblast Sanitary Epidemiological Station, and Donetskiy Medical
Institute

"Vesicular Rickettsiosis in the Ukrainian SSR"

Abstract: Since the outbreak of vesicular rickettsiosis in Donetskaya Oblast
in 1948-1950, with the peak number of 394 rickettsiosis patients recorded in
1950), comprehensive therapeutic and preventive measures have been applied and
epidemiological, clinical, etiological, and laboratory data regularly recorded.
Statistical analysis of the data indicates a steady decline in the frequency of
the disease to 189 cases in 1955, 41 in 1960, 6 in 1964, 3 in 1968, and none
in 1969 and 1970. According to serological tests performed on a large number
of healthy individuals and patients with various febrile diseases, there are
no population contingents with immunity to vesicular rickettsiosis, suggesting
that the number of undiagnosed cases is small if not zero. Surveys performed
in Zhitomir, Kiev, and a number of regions in Kiev Oblast indicate absence of
rickettsiosis in those areas.
1/1

Phytology

SMIRNOV, Yu. S., FEDOROV, Al. A., and SHKOL'NIK, M. Ya., Botanical Institute
imeni V. L. Komarov of the Academy of Sciences, USSR Leningrad

"Teratological Changes in Plants Induced by Large Doses of Growth Stimulators
and Herbicides and Their Biochemical Mechanisms"

Abstract: This article briefly reviews the literature on the teratological
changes which are induced in plants by high concentrations of growth stimu-
lators and herbicides. The diverse structural abnormalities which occur
involve both vegetative and reproductive organs and appear to be associated
with disruption of the normal course of mitosis and a significant increase in
the activity of ribonucleases. The authors' experiments on the effects of the
growth stimulator heteroauxin and the herbicides 2,4-dichlorophenoxyacetic acid
and maleic acid hydrazide are described. On the basis of experimental and
literature data it is concluded that teratological changes are the result of
disruption of cell division, which in turn is caused by: degradation of
nucleoli; disruption of biosynthesis of DNA and changes in DNA; disturbances
in the fine structure of chromatin; and disruption of the synthesis of specific
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USSR

SMIRNOV, Yu. S., et al., Botanicheskiy Zhurnal, Vol 56, No 5, 1971, pp 633-646

proteins, including the synthesis of the enzymes which catalyze polymerization
of the structural proteins of the protoplasm and nucleus. Formative changes
may also be the result of disruption of the bond of a complex of DNA-histons,
which leads to the loss of the cell's capacity to control the genetic appara-
tus. It is possible that this type of change takes place when the teratologi-
cal changes are of a hereditary nature.

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1/2   010
UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--PREPARATION OF SODIUM FLUORIDE SOLUTIONS FROM FLUOROSILICIC ACID
   AND A SODA SOLUTION -U-
AUTHOR--KAVNATSKAYA, B.S., PRIVEN, E.M., GNEZDILOVA, L.M., SHKOLNIK, N.M.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. UKR. 1970, (1) 59-60

DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, CHEMISTRY

TOPIC TAGS--SODIUM FLUORIDE, INORGANIC ACID, SILICON COMPOUND, CRYOLITE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1335   STEP NO--UR/0436/70/000/001/0059/0060

CIRC ACCESSION NO--AP0106112
                   UNCLASSIFIED

2/2   010

CIRC ACCESSION NO--AP0105112   UNCLASSIFIED   PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. THE OPTIMAL CONDITIONS FOR THE
CONVERSION OF H SUB2 SIF SUB6 BY PRODUCT IN SUPERPHOSPHATE PLANTS INTO
NAF SOLNS. BY REACTION WITH NA SUB2 CO SUB3 WERE OBTAINED EXPTL. THE
NAF SOLN. IS USED FOR THE PRODUCTION OF NA SUB3 ALF SUB6. IT IS
RECOMMENDED THAT A 10-12PERCENT ACID SOLN. AND A 5.5-6.5PERCENT NA SUB2
CO SUB3 SOLN. BE USED AT 85-90DEGREES. THE REACTION IS COMPLETED IN 45
MIN AND THE FILTRATE CONTAINS 3.5-3.8PERCENT NAF. PH HAS TO BE KEPT
BETWEEN 6.8 AND 8. THE FILTER RESIDUE IS USED FOR PRODUCTION OF NA
SILICATE. FOR THE PREPN. OF NA SUB2 CO SUB3 SOLNS. THE MOTHER LIQUORS
OF THE CRYOLITE PRODUCTION ARE USED.

UNCLASSIFIED

USSR

UDC 621.317.575

SHKOL'NIK V. M.

"Method of Measurement of Phase Shift"

Izmeritel'naya Tekhnika, No 11, 1971, pp 58-60.

ABSTRACT: A change in the frequency of a calibrated RC phase shifter causes a disruption of calibration of the scale. The method of measurement of phase shift described here does not have this shortcoming. It allows the shift angle between two alternating voltages of sinusoidal form to be measured, eliminating the error in measurement of phase shift resulting from the influence of frequency. A schematic diagram is presented of a simple circuit embodying the principles set forth in the article. In some cases, the circuit can be used to replace more complex devices used for measurement of phase shifts in certain frequency ranges by the compensation method.

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1/2   025   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--PROCESSING AND USE OF TITANIUM BLAST FURNACE SLAGS -U-

AUTHOR-(04)-OOVGOPOL, V.I., KOCHETOV, N.N., ORININSKIY, N.V., SHKOLNIK,
  YA.SH.
COUNTRY OF INFO--USSR

SOURCE--METALLURG (MOSCOW) 1970, 15(3), 39-40

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--BLAST FURNACE, SLAG, TITANIUM, METALLURGIC RESEARCH FACILITY,
  CEMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0915   STEP NO--UR/0130/70/015/003/0039/0040

CIRC ACCESSION NO--AP0133004
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0133004   UNCLASSIFIED   PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE USUAL BLAST FURNACE SLAGS ARE
MAINLY UTILIZED IN THE PRODUCTION OF PORTLAND CEMENT BUT THOSE CONTG.
HIGHER TIO SUB2 CONCNS. (5-13PERCENT) SHOW LESS HYDRAULIC ACTIVITY TO
THEIR LOW SOLY.   IT IS ASSUMED THAT THE QUALITY OF CEMENT IS NOT POOR IF
SLAG CONTAINS SMALLER THAN OR EQUAL TO 4PERCENT TIO SUB2, SF. SURFACE OF
CEMENT IS GREATER THAN 4000 CM PRIME2 -G, AND THE CONTENT OF TI SLAG IN
IT IS SMALLER THAN 50PERCENT.   THE SWELLING TENDENCY OF TI SLAGS IS GOOD
AND THEY CAN BE USED IN THE PRODUCTION OF FOAMED SLAG.   MOREOVER,
PAVEMENT BLOCKS, CRUSHED SLAG, AND SLAG WOOL ARE PRODUCED.   PRODUCTION
OF FOAMED SLAG IS THE MOST ECONOMIC AND SUITABLE MEANS OF UTILIZATION OF
TI SLAG.   FACILITY: URAL. INST. CHERN. METAL., SVERDLOVSK, USSR.

UNCLASSIFIED

USSR

UDC: 681.2.088

NEUYMIN, Ya. G., POPOVA, I. A., RYVKIN, B. L., SHKOL'NIK, B. A.

"Estimates of the Dynamic Error of Measurements"

Moscow, Metrologiya, No 1, 1973, pp 33-44.

Abstract: Standard and minimized estimates are produced for the dispersion of dynamic measurements based on the unevenness of the amplitude-frequency characteristics of a device and the moments of its weight function. The esti- mates are useful under conditions of incomplete information on the dynamic properties of measurement equipment both in the stage of planning and in its operation.

1/1

USSR

UDC 621.396.677

SHKOL'NIKOV, A. M.

"Scattering Matrix of the Optimal Loading Circuit of a Balanced Van Etta Array"

Tr. Mosk. energ. in-ta (Works of the Moscow Power Engineering Institute), 1972, vyp. 108, pp 12-14 (from RZh-Radiotekhnika, No 7, Jul 72, Abstract No 7B28)

Translation: The optimal scattering matrix is defined for a balanced array of elements with known radiation pattern. It is proposed that the load circuit be constructed on the basis of a lobe-forming circuit with optimal reactive loads at the decoupled and matched inputs insuring a maximal level of re-reflected signal. The bibliography has 2 entries.

1/1

USSR

SHKOL'NIKOV, A. M.

UDC   621.396.677

"Method for Finding the Optimal, Orthogonal, Radiation Pattern of a Multi-Beam, Antenna Array"

Tr. Mosk. energ. in-ta (Works of the Moscow Power Engineering Institute), 1972, vyp.119, pp 32-39 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 B33)

Translation: Formulas are derived for determining the optimal, non-normalized, radiation patterns starting with the matrix of the scanning coefficient which connect the system of non-orthogonal radiation patterns for the given array where the radiation patterns are considered optimal in one sense or another with the base system of orthogonal radiation patterns for the given array. The latter is obtained on the basis of normalizing the eigenvectors of the reciprocal resistance matrix of the emitters. Examples are given from setting up orthogonal radiation patterns on the basis of various criteria of optimization (maximum directive gain and constancy of the amplitude characteristics). Original article: two illustrations and six bibliographic entries.   N.S.

1/1

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Waveguides

USSR

UDC 621.385.6

SOBENIN, N.P., SHKOL'NIKOV. E. Ya.

"Some Problems Of The Calculation Of Nonperiodic Structures"

V sb. Uskoriteli (Accelerators--Collection Of Works), No 12, Moscow, Atomizdat, 1970, pp 96-101 (from RZh--Elektronika i yeye primeneniye, No 10, October 1970, Abstract No 10A25)

Translation: The solution is presented of a problem devoted to determination of B_ϕ (z) and E_z (z), taking account of the strong coupling between units [yacheyka] in the iris waveguide of a linear electron accelerator. An earlier problem was solved for a weak coupling between units and with the absence of reflected waves. In the present solution, moreover, an expression is obtained for the modulus of the coefficient of reflection from the irregular part of the iris waveguide. The re- sults of the calculation agree well with experiment. 7 ref. Zh.N.

1/1

USSR

UDC 531.781.2.088:681.33

LASEVICH, L. G., SHKOL'NIKOV, M. B., SHNEYDER, I. A., and
ZATS, G. Ya.

"Algorithm of Primary Processing of Results of Multiple-Point
Static Strain Measuring for the Electronic Digital Computer
'Minsk-22' "

Tr. Tsentr. N.-I. Avtomob. i Avtomotor. In-ta / Works of the
Central Scientific Research Automobile and Automobile Engine
Institute /, No 132, 1971, pp 47—51 (from Referativnyy Zhur-
nal, Metrologiya i Izmeritel'naya Tekhnika, No 32. Single Issue
No 1, 1972, Abstract No 1.32.585, Resume)

Translation : the algorithm of the program of automated proces-
sing of results of multiple-point static strain measuring on the
electronic digital computer Minsk-22 is analyzed. In the discus-
sed program is realized a complex of mathematical and logical ac-
tions on readings of the tensometer by strain measuring of con-
structions. The automated processing permits: a). to calculate
the magnitude of stresses recorded by each strain gage; b). to

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USSR

LASEVICH, L. G., et al., Tr. Tsentr. N.-I. Avtomob. i Avtomotor. In-ta, No 132, 1971, pp 47-61

show and to compensate roughly erroneous measurements with assigned fiducial probability; c). to rate the source of insufficient accuracy of strain measuring with assigned fiducial probability; d). to calculate the rating of mathematical expectation of stresses recorded by each strain gaga; e). to calculate the fiducial interval of measured stresses. The use of electronic digital computer for processing of results of strain measuring permits to change radically the existing methods of processing. The rapid action of the electronic digital computer opens new potentialities for strain gaging and permits to carry out experiments on a higher level. Three illustr., five biblio. refs.

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USSR

UDC   621.783:621.371.332:523.4

LUZIN, D. S., SPIRIDONOV, Yu. G., FOMINYKH, S. I., and SHKOL'NIKOV, V. A.

"Investigating Refraction, Doppler Frequency Shifts, Field Intensity, and Caustics in the Radio Transmissibility of the Martian Atmosphere"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 3 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 3--collection of works) "Nauka," 1972, pp 32-36 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A428)

Translation: The refraction and field intensity in the atmosphere of Mars are computed over various trajectories of the Martian artificial satellites in the frequency range of 100-2200 MHz. An empirical formula is obtained for the refraction angle in the ionosphere as a function of the frequency. The Doppler shift introduced by the ionosphere and troposphere is given in terms of the position of the satellite. An investigation is made of the effect of horizontal heterogeneities in the Martian ionosphere on the accuracy of measurements of the electron concentration from the data on the eclipsing of radio communications. Five illustrations, bibliography of three. N. S.

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